

2. Amendment to Claims

The previous claims 1 -18 in the old specification 10,707714

Claim 1 An optoelectronic visual system, for driving safety view, initial as the e-mirrors
. . . . to . . .

Claim 18 The quad 2X2 optoelectronic visual system. . . safety views in full screen.

are removed, and are replaced with following claims 1- 13 :

What is claimed is:

[Claim 1] A panoramic visual system for advanced driving safety view, named as the panoramic e-Mirrors system, comprising:

a panoramic screen mount;

a multi-screens panoramic display;

multiple micro cameras, featuring ultra night vision, super compact, yet water proof, light weight enough to be surface mounted ; and

multiple O ring grip 3D tilt able mount, each of them mounting each of said multiple micro cameras on external surface of a vehicle.

[Claim 2] The panoramic visual system of claim 1, comprises multiple corners surface mount techniques to mount each of the multiple micro cameras at spots near to turning signal lights of the vehicle.

[Claim 3] The panoramic visual system of claim 1, further comprises variable rear view capturing techniques to form a variable format panoramic rear proximity view basic on the vehicle type, size and applications.

[Claim 4] The panoramic visual system of claim 1, wherein said multi-screens panoramic display comprises at least 3 LCD screens, or at least 3 organic OLED screens, leveled and mounted side by side together at a driver's front vision utilizing the panoramic screen mount

on dash board mounted multi-screens panoramic display;

driving instrument integration mount multi-screens panoramic display;

on central rear mirror mounted multi-screens panoramic display;

on sun visor mounted multi-screens panoramic display; as well as

on radio receiver bay mounted multi-screens panoramic display.

[Claim 6] The panoramic visual system of claim 1, wherein multi-screens panoramic display comprise auto adjusting screen brightness and contrast ratio to multiple screen according to ambient light, so that to display brighter image at daylight to anti fade out, and dimmer image at night to anti flare.

[Claim 7] The panoramic visual system of claim 1, wherein each of said multiple micro cameras, comprise:

a distributing modular designed architecture;

a super integrated front end optical module, merely half of a thumb, water proof, super light weight, enough for easy surface mount on any external spot of the vehicle;

a micro back end electronic circuit module, to be mounted and hided inside the vehicle; and

a detachable thin flexible cable, connecting said micro front end module and said micro back end circuit module together;

whereby the distributing modules architecture makes the multiple micro cameras much smaller size than conventional cameras.

[Claim 8] The panoramic visual system in claim 4, wherein said the super integrated micro front end module comprises :

a set of high optical power micro lens, having ultra night vision;

a multi stage micro cylindrical water proof enclosure, combining a lens holder, a CCD holder 3 in 1, total dimensions as small as half a thumb size;

an ultra sensitive CCD sensor, sensible at natural dark night without using light emitting LED;

whereby to assemble an ultra tiny light weight, ultra high vision super integrated camera for surface mount to capture superior quality safety view images.

[Claim 9] The panoramic visual system in claim 6, wherein said micro back end electronic circuit module comprises :

a DSP digital signal processor that can auto switch shuttle speed at very broad range from 1/50.-to 1/ 10000, to anti image flare and widen out cause by head light projection from rear following vehicles;

a super low noise and super high gain electronic circuit design having 12 db higher signal to noise S / N ratio gains 16 times beyond regular 48 DB safety view board lens camera for superior clear night vision; and

a mirroring function switch that can flip video from left to right, right to left.

[Claim 10] The e-mirrors system of claim1, wherein said multiple O ring grip 3D tilt able mount comprise :

an O ring grip at top end of said O ring grip mounts, able to grasp the multi stage micro cylindrical water proof enclosure;

a small flat footpad at bottom end of said O ring grip 3D tilt able mount;

a double sides surface adhesive fasteners or a strong and flat neo-magnet chip underneath of said small footpad mount for screw less surface mount; and

a 3 dimensional tilt able ultra light micro mechanism that join said O ring grip and said small flat footpad together to form the O ring grip 3D tilt able mount;

whereby to be able screw less instant surface mount the multiple micro cameras on any external spot of a vehicle, to protect shiny finished body of luxury vehicles from drilling screw holes, and further to obtain best proximity view of blind spot.

[Claim 11] The panoramic visual system in claim 3, wherein said variable rear view capturing techniques to obtain best proximity views, comprise :

mounting 1 of the micro cameras at each of rear 2 corners near to rear turning signal light;

pointing rear corner mounted the micro cameras to capture rear diagonal filed of view and with a little bit rear face of the vehicle for dynamic proximity distance estimation;

mounting 1 of the micro cameras at rear central spot of the vehicle;
connecting the micro camera at the driver side rear corner to the right screen of the multi-screens panoramic display;
connecting the micro camera at passenger side rear corner to the left screen of the multi-screens panoramic display;
connecting the micro camera at the rear central spot to the center screen of the multi-screens panoramic display;
activating the mirroring function switch in claim 9 to flip all video image in the multi-screens panoramic display.

[Claim 12] A set techniques to form panoramic display image quasi equal size to the image in conventional rear view mirrors, so to obtain accurate proximity view of rear object , comprise :

using narrow angle lens to zoom in proximity view near to the image scale of conventional glass rear view mirrors;
applying 3, 4 or 5 of micro cameras to cover the full 180 degree rear view;
applying 3, 4 or 5 LCD leveling side by side to form a panoramic e-Mirror; and
selecting LCD screen having vertical screen size quasi equal height as the regular central rear view mirror.

[Claim 13] A compound multi screens e-Mirrors system for large vehicles and long trailer vehicles that has no central rear view mirrors, comprise:

a quad video 2 x 2 screen array LCD display, set on dashboard central, monitoring both sides traffic of a long container or trailer vehicles;

a multi LCD screen panoramic e-Mirror, having at least 3 screens side by side leveled mount at the central rear view mirror spot;

multiple micro cameras, at least 3 of said micro cameras mounted at rear to form panoramic rear view, and to display video at the multi LCD screen panoramic e-Mirror;

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said micro cameras mounted at both side front and middle spot of the long container or trailer vehicles symmetrically, and connected to same vertical size of the quad video 2 x 2 screen array LCD display ;
and

multiple O ring grip 3D tilt able mount, surface mounting each of said multiple micro cameras on the long container or trailer vehicles.